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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/528,765	12/01/2006	Jin-Xing Li	WSAG0107PUSA	4667
22045	7590	06/22/2010	EXAMINER	
BROOKS KUSHMAN P.C. 1000 TOWN CENTER TWENTY-SECOND FLOOR SOUTHFIELD, MI 48075			LANGMAN, JONATHAN C	
			ART UNIT	PAPER NUMBER
			1784	
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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/528,765	Applicant(s) LI ET AL.	
	Examiner JONATHAN C. LANGMAN	Art Unit 1784	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 24 March 2010.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 47-67 is/are pending in the application.
- 4a) Of the above claim(s) 47-63 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 64-67 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Claim Rejections - 35 USC § 112

The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

Claims 66 and 67 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention.

Claims 66 and 67 set forth a substrate with two LTO layers on one side of a substrate, via claim 64, and an epitaxial film formed on the opposite surface of the substrate. As seen in instant Figure 1, claim 64, is drawn to an intermediate product with two LTO backside layers. Claims 66 and 67 are drawn to a final product as seen in Figure 2, and described in paragraph [0034] of the instant pg PUB, where an epitaxial layer is formed on the intermediate product of figure 1. When the substrate with two LTO layers undergoes epitaxial deposition to form the epitaxial layer of claims 66 and 67, the two layer LTO backside layer is densified to form a single LTO layer as seen in instant Figure 2. Therefore the applicant has not shown and the Examiner can not find support for an epitaxial layer on one surface of a substrate, as taught in instant claims 66 and 67, in combination with a two layer LTO backside seal as taught in instant claim 64.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claim 64 is rejected under 35 U.S.C. 102(b) as anticipated by or, in the alternative, under 35 U.S.C. 103(a) as obvious over Barth et al. (US 2002/0076917).

Barth et al. teach a substrate, with an undoped LTO PECVD formed layer with a stress of $0.8E^9$ dynes/cm² (which converts to 80 MPa). Upon which is deposited a doped LTO PECVD layer with a stress of $1.5E^9$ dynes/cm² (which converts to 150 MPa) (see at least abstract and [0027]).

These two layer oxide films satisfy the instantly claimed two layer LTO backside seal. Wherein the first LTO layer has a stress of less than 100 MPa, the second LTO layer has a stress of less than 300 MPa, and the stress of the second LTO layer is greater than the stress of the first LTO layer.

The two layers of Barth have the same stress and structural claim limitations as instantly claimed. Therefore the two layer LTO stack of Barth is said to possess the descriptive and/or functional claim language of "backside seal".

The instant claim limitation of "wafer substrate" is merely a descriptive term that sets out no structural limitations for the substrate. Therefore little to no patentable weight is given to the term "wafer", in as much as the substrate of Barth anticipates the instantly claimed substrate.

Barth is silent to the PECVD coatings to be "LP" i.e. "Low pressure". However this is process a limitation that will not result in a structural difference between the claimed product and PECVD formed structure of Barth. Even though product-by-process claims are limited by and defined by the process, determination of patentability is based on the product itself. The patentability of a product does not depend on its method of production. If the product in the product-by-process claim is the same as or obvious from a product of the prior art, the claim is unpatentable even though the prior product was made by a different process.", (In re Thorpe, 227 USPQ 964,966). Once the Examiner provides a rationale tending to show that the claimed product appears to be the same or similar to that of the prior art, although produced by a different process, the burden shifts to applicant to come forward with evidence establishing an unobvious difference between the claimed product and the prior art product (In re Marosi, 710 F.2d 798, 802, 218 USPQ 289, 292 (Fed. Cir. 1983), MPEP 2113). Since, as set forth above, Barth teaches the same structure as instantly claimed, little to no patentable weight is given to the process claim language of "low pressure".

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claim 65 is rejected under 35 U.S.C. 103(a) as being unpatentable over Barth et al. (US 2002/0076917) as applied to claim 64 above, in view of Chen (US 6,440,840).

Barth et al., as described above, teach a substrate, upon which is deposited an insulator of two LTO layers possessing the instantly claimed film stresses. Barth teach that this dual layer is capable of forming metallization of copper in a dual damascene process thereon ([0006]-[0007] and [0028]).

Barth et al. is silent to the substrate, specifically the substrate being a wafer substrate with a polysilicon layer located between the first insulating layer and the substrate, as set forth in instant claim 65. However it would have been obvious to utilize any known substrate in the art, especially a substrate utilized for the damascene processing of copper on FSG insulating layers.

Chen et al. teach a structure which comprises a wafer substrate (see at least Chen, col. 2, lines 49-50, and claim 1) (not shown) upon which is formed an electrical conducting layer, 10, such as polysilicon (Chen, claim 2). Upon the substrate is deposited a barrier layer, 12, of silicon nitride, and an FSG layer, 14, before metallization occurs (col. 3, line 60 to col. 4, line 18). This structure is similar to that structure of Barth et al.

It would have been obvious to utilize the wafer substrate of Chen comprising the polysilicon layer, as the substrate of Barth, as these are used in the same art of forming dual damascene copper metallization.

Response to Arguments

Applicant's arguments with respect to claims 64-67 have been considered but are moot in view of the new ground(s) of rejection.

Conclusion

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to JONATHAN C. LANGMAN whose telephone number is (571)272-4811. The examiner can normally be reached on Mon-Thurs 8:00 am - 6:30 pm EST.

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If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jennifer McNeil can be reached on 571-272-1540. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

JCL

/Timothy M. Speer/
Primary Examiner, Art Unit 1784